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Safety Evaluation

Safety Evaluation Number[1]: SE-W375-00-00013 Revision No: 0

ABCN Number: ABCN-W375-00-00016

Safety Evaluation Subject: Unrestricted Area Dose Rates

PART I: DESCRIPTION OF THE PROPOSED REVISION, BACKGROUND, AND SCHEDULE

1. Describe the proposed revision (including credible failure modes, if applicable).

   - Clarifies statement in ISMP section 3.9.1.2 to note that ALARA features are shown on applicable facility layout drawings and other design documents – not on one specific "set of radiation protection drawings."
   - Replaces reference to ISMP sections 2.3 and 3.91.2 as implementing standards in SRD Vol. II Safety Criterion 2.0-3 with G-10 CFR 835/B2, Occupational ALARA Program.

2. Identify the affected Authorization Basis (AB) documents and perform a comparison and assessment of the revision against the AB.

   - ISMP sections 2.3 and 3.9.1.2: These ISMP sections are currently cited in SRD Safety Criterion 2.0-3 as implementing standards; the citation will be replaced with G-10 CFR 835/B2. Also, ISMP section 3.9.1.2 is being revised to clarify the project's approach for documenting ALARA design features.
   - SRD Vol. II Safety Criterion 2.0-3: The implementing standard for this safety criterion will be changed from ISMP sections 2.3 and 3.9.1.2 to G-10 CFR 835/B2.

   The assessment of the change against the AB is contained in section II below.

3. List the references used for the safety evaluation.

   1. BNFL-5193-ISP-01, Rev. 4b, *Integrated Safety Management Plan*
   2. BNFL-5193-SRD-01, Rev. 2e, *Safety Requirements Document*
   3. BNFL-TWP-SER-003, Rev. 3, *River Protection Project – Waste Treatment Plant Radiation Protection Program For Design*, November 15, 1999
   4. DOE/RL-96-0006, Revision 1, July 1998, *Top-Level Radiological, Nuclear, and Process Safety Standards and Principles for TWRS Privatization Contractors*, U.S. Department of Energy, Richland Operations Office
   5. RL/REG-97-07, Revision 0, 6/25/97, *Guidance for the Review of TWRS Privatization Contractor Integrated Safety Management Plan Submittal Package*, June 1997, DOE/RL Office of Radiological, Nuclear, and Process Safety Regulation for TWRS Privatization Contractors, Richland, WA
   6. RL/REG-98-03, Revision 0, *DOE Regulatory Unit Evaluation Report of the BNFL Inc. Integrated Safety Management Plan*, March 1998, DOE/RL Office of Radiological, Nuclear, and Process Safety Regulation of TWRS Privatization Contractors, Richland, WA
   7. RL/REG-99-20, Revision 0, *Guidance for the Review of TWRS Privatization Contractor Revised Standards Approval Package for Construction Authorization*, August 31, 1999, DOE/RL Office of Radiological, Nuclear, and Process Safety Regulation of TWRS Privatization Contractors, Richland, WA
   8. G-10 CFR 835/B2, Rev. 1, *Implementation Guide for Use with Title 10, Code of Federal Regulations, Part 835, Occupational Radiation Protection – Occupational ALARA Program,* DOE Assistant Secretary for

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Environment, Safety and Health, November 1994

4. Describe the planned revision implementation schedule.

The changes to the SRD and ISMP will be incorporated within 30 days of RU approval.

PART II: REGULATORY IMPACT OF PROPOSED AB REVISION

The following questions are to be answered as part of the safety evaluation, to determine if the proposed AB revision (and the proposed initiating change if applicable) requires prior RU approval.

	YES	NO
1. Does the revision involve the deletion or modification of a standard previously identified or established in the approved SRD?	☒	☐

JUSTIFICATION:

SRD Vol. II Safety Criterion 2.0-3 references ISMP sections 2.3 and 3.9.1.2 as implementing standards. These ISMP sections are being replaced by G-10 CFR 835/B2, Occupational ALARA Program.

2. Does the revision result in a reduction in commitment currently described in the AB?	☒	☐

JUSTIFICATION:

The existing ISMP commits to having a "set of radiation protection drawings" that document facility zoning, minimum shielding requirements, and access control features. Although it was never intended that a limited, defined set of "Radiation Protection" drawings be developed, the language in the ISMP could be construed to require such a "set." The variety of ALARA design features such as those specifically listed in the ISMP is such that they cannot all be depicted on a single "set" of drawings.

The revision to ISMP section 3.9.1.2 clarifies that the listed ALARA design features will be shown on applicable facility layout drawings and other design documents; the commitment to document facility zoning, minimum shielding requirements and access control features remains unchanged.

The wording of SRD Vol. II Safety Criterion 2.0-3 is not being changed; therefore, BNFL Inc. maintains its commitment to comply with the applicable portions of WAC 246-221-060 (1) and WAC 246-247-040 (2), i.e., that maximum dose rate from external sources in any unrestricted area will not exceed 0.002 rem in any one hour.

G-10 CFR 835/B2 is more responsive to the SRD safety criterion than the ISMP sections it replaces; therefore, the level of commitment is not reduced. Specifically, ISMP sections 2.3 and 3.9.1.2 do not address dose limits from external sources in unrestricted areas, which is the subject of SRD Safety Criterion 2.0-3. Section I of G-10 835/B2 requires that: "External sources of radiation in areas of continuous occupational occupancy (2,000 hours/year) shall be maintained below an average of 0.5 mrem per hour and as far below

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	YES	NO
this average as is reasonably achievable (10 CFR 835.1002(b))..." The continuous occupancy limit of 0.5 mrem/hr equates to an average dose rate of 0.0005 rem/hr, which is 25% of the limit in Safety Criterion 2.0-3 for unrestricted areas. While this standard does not specifically address dose rates in unrestricted areas, adherence to the guidance in G-10 835/B2 will ensure that the contribution to dose rates in unrestricted areas from radiation sources within the RPP-WTP is a fraction of the limit in Safety Criterion 2.0-3. In addition, the results of the most recent full-year (CY 98) readings from the ten TLDs which are in place around the perimeter of the construction site show that the average hourly dose rate from natural background radiation and the influence of other Hanford facilities is 0.010 mrem/hr, or 0.5% of the limit of Safety Criterion 2.0-3. It follows that offsite radiation sources will have a very small impact on dose rates within unrestricted areas of the RPP-WTP site. Therefore, by ensuring that dose rates in continuous occupancy areas of the plant are ALARA, the selected standard will help ensure that the limit of Safety Criterion 2.0-3 is not exceeded. **Furthermore, G-10 CFR 835/B2 provides design and operational guidance for maintaining radiation exposures ALARA; use of the guidance in this standard will help ensure that the limit of Safety Criterion 2.0-3 is not exceeded.**		
3. Does the revision result in a reduction in the effectiveness of any program, procedure, or plan described in the AB. JUSTIFICATION: **The revision to ISMP section 3.9.1.2 merely clarifies that ALARA features will be shown on applicable facility layout drawings and other design documents. The effectiveness of the ALARA design program is not reduced, because the facility radiation zoning, minimum shielding requirements and access control features are still being provided in the design. G-10 CFR 835/B2 is more responsive to the SRD safety criterion than the ISMP sections it replaces; therefore, the effectiveness of the ALARA design program is not reduced.**	☒	☒

Note: Guidance on defining the terms and responding to the above questions is provided in K70C528, Code of Practice for Managing Changes to the Authorization Basis, Appendix 6.

If all the answers to the above questions are no, then the change can be made without prior RU approval.

If any of the above answers is yes, then RU approval is required prior to implementation of the AB revision (and the initiating change if applicable). An ABAR shall be prepared to obtain RU approval (see K70C528, Appendix 7.)

PART III: SAFETY EVALUATION CONCLUSION

☐ All PART II questions are answered No. Therefore, RU approval is NOT required prior to implementing the proposed AB revision (and initiating change where applicable).

☒ At least one PART II question is answered Yes. Therefore, RU approval IS required prior to implementing the proposed AB revision (and initiating change where applicable). Issuance of an ABAR is required to obtain RU

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approval.

Evaluator/Originator	Date
Reviewer[2]	Date
Radiological, Nuclear, and Process Safety Manager	Date
Chair, Project Safety Committee[3]	Date
RPP-WTP General Manager[3]	Date

[2] The reviewer should be a person from the same department as the Evaluator/Originator and at least as qualified as the Evaluator/Originator to conduct safety evaluations.

[3] This signature required if Safety Evaluation concludes AB change can be made without RU prior approval. If RU approval (ABAR) is required, PSC and GM signatures occur on the ABAR.